

[19 (c20)]

A method of forming retrograde n-well and p-well regions on a substrate, comprising the steps of:

forming a first mask structure on the substrate comprised of a first thin layer on the substrate and a second thick layer on said thin layer;

removing portions of said second layer; defining an image in said second layer

carrying out n-well implants into regions of the substrate beneath said removed portions of said second layer;

removing portions of said first layer;

carrying out a first p-well implant through said first layer so that a first implant region is formed immediately below the n-well and a second implant region is formed below the first mask structure;

forming a second mask structure on the substrate having an image generally complementary to the first mask structure; and

carrying out p-well implants into regions of the substrate exposed by the second mask structure.

[20 (c21)]

A CMOS device having FETs with effective channel lengths less than or equal to approximately 0.11 μm formed in adjacent, retrograde n-wells and p-wells, wherein threshold voltages of FETs formed with approximately 1.5 μm of an interface between said n-wells and p-wells are constant within approximately 10 mV.

[h3] Abstract of the Disclosure

[p17] A method of forming retrograde n-wells and p-wells. A first mask is formed on the substrate and the n-well implants are carried out. Then the mask is thinned, and a deep p implant is carried out with the thinned n-well mask in place. This prevents V_t shifts in FETs formed in the n-well adjacent the nwell-pwell interface. The thinned mask is then



removed, a p-well mask is put in place, and the remainder of the p-well implants are carried out.

[h7] **Figures**